

Grouping of Small Scale Private Water Supplies to Create Critical Mass for Programme of Investment to Improve Drinking Water Quality in Rural Ireland

1. Description of Initiative

1.1 Piped water supply to many parts of rural Ireland is provided through some 750 communities owned, private water supply systems known as Group Water Schemes. Water is abstracted from surface and groundwaters and supplied to populations of between 50 and 4000 persons. Many sources are subject to organic pollution from agriculture and domestic wastewater systems. Up to 500 schemes are required to provide effective, stand-alone water treatment and disinfection facilities.

1.2 An innovative approach was taken in a number of ways:

- New procurement routes (under which a single grouped Design Build (DB) contract with each scheme has its own 20 year operation and maintenance (O&M) contract with the Private Service Provider (PSP)) minimise capital and operational costs, offer affordability and value for money and safeguard the investment through long-term satisfactory operation/maintenance of the asset.
- The effectiveness of emerging alternative water treatment processes, using micro-filtration and membrane technologies in association with low pressure mixed media filters, ozonation and disinfection.
- Implementation by partnerships between the local authorities, the local community-owned group water schemes and expert contractors or PSPs.
- A Performance Management System, which includes a forum for interaction with the local community, was developed to guarantee effective and long term satisfactory operation and maintenance of the asset

1.3 Community groups lack the management and technical expertise to plan, design and implement complex projects. PSP interest was confined to larger projects with sufficient critical mass to generate the required investment return. Partnerships at local level, involving several group schemes and the local authority, sought expressions of interest from PSP's who would plan, DB and operate/maintain water treatment plants on behalf of the two partners. Critical mass was achieved by grouping or bundling a number of smaller projects under a single capital contract. As part of a capacity building exercise, a training and development programme was introduced for the community groups to develop skills and expertise in managing a modern water supply business, awareness of water quality issues, the legislative framework for water and customer service.

1.4 Grouped DB Operate contracts offer substantial cost efficiencies (25% typically) over traditional procurement routes, with the local authority and the private group schemes jointly acting as Contracting Authority. Each participating scheme has its own 20-year O&M contract that ensures buy-in by the local community and assists in local efforts to protect the source and conserve supply. A detailed Procurement Guidance Document was prepared to ensure a consistent approach throughout the country.

1.5 Eco friendly and sustainable processes using micro-filtration and membrane technologies do not give rise to the production of chemical sludges which subsequently require treatment and disposal. Backwash material, organic in nature, can be returned to the environment without adverse impact. By harnessing local sources, the benefits of source protection measures are immediately recognisable by local community in terms of improved raw water quality and consequent reduced treatment costs. This improves sustainability and assists in the conservation of supply.

2. Mainstreaming

2.1 DBO procurement together with the bundling of schemes is official national policy for the provision of water treatment and disinfection equipment on rural water supply schemes. This principle is now extended to all water and wastewater projects being advanced in Ireland. Standardised procurement arrangements are in place to ensure consistency and a standard Performance Management System is enabled in each contract.

2.2 Project cost (Capex and Opex) cost is minimised through:

- Bundling of smaller schemes under a single contract provides critical mass and is consistently giving cost savings of 25% compared to conventional procurement.
- The fixed element (labour, transport, office) of the O&M cost is spread across all schemes in the bundle. Volumetric charges are scheme specific, thus encouraging conservation of the supply and protection of the source.
- DBO procurement plus a 20 year O&M period ensures only robust, cost efficient processes are used by the PSP
- Performance Management System guarantees satisfactory O&M and provides a forum for community involvement in ongoing management of plant and customer care, complaints register and buy in.

3. Replicating the initiative.

3.1 International private sector providers/contractors are interested in projects of this type provided the project has critical mass and an open/transparent approach is taken to DBO procurement, shortlisting of contractors, assessment of bids and award of contract. The Procurement Guidance Document was designed to ensure this and has widespread applicability.

3.2 Packaged and containerised plants can be used across a broad range of source types (ground or surface waters) and deal effectively with a range of water quality problems (biological, chemical and suspended matter). These plants require a low level of maintenance and modern telemetry systems can provide for remote operation (one plant in the west of Ireland is monitored from Scandinavia). Advances in alternative energy sources, particularly photo-voltaic cells and wind energy systems, will assist with operation in under-developed and remote areas.

3.3 Lessons learned include:

- Critical mass is essential in order to attract top class PSP's and ensure affordability. Grouping or bundling projects under a single contract can achieve this.
- Each treatment process is site specific and no single technology will work across a range of source types. DBO's are performance-based contracts and "fitness for purpose" must be a key element of each contract.
- Individual O&M contracts with participating schemes are essential to get real buy in by local community and assist in water conservation and source protection measures
- O&M financial benefits can be positive for all schemes participating in a bundled contract: the fixed elements of the O&M contract can be spread across a wider base.
- Containerised package plants or plants employing cutting edge technologies should only be procured under DBO where the operation phase of contract is ideally 20 years. This will ensure robust construction and cost efficient operation with energy costs minimised.